INTRODUCTION

Owing to the great achievements of technological advances, there has been a substantial decrease in intrapartum mortality and other adverse outcomes in maternity care during the past 3-4 decades. Modern technical devices have been developed to help obstetricians determine fetal conditions in time for prevention.

Furthermore, the estabilishment of Perinatal Intensive Care Centers (PICC) throughout the country, improved preterm newborns' chances for survival as weel as chances of a good pregnancy outcome considerably.

1. As preterm delivery accounts for 70-90% of perinatal mortality, clinicians' main goal has been to reduce the number of preterm deliveries as much as possible. Between 1970 and 2003, the frequency of preterm delivery in Hungary decreased from 11-12% to 8-9%.

2. On the other hand, however, the number of intrauterine deaths remained practically unchanged for all those decades. Therefore, the use of diagnostic methods is of outmost importance.

OBJECTIVES

DIAGNOSING CRITICAL FETAL CONDITIONS IN TIME FOR ACTION AND PREVENTION

(1) Did the use of antepartum diagnostic methods help to prevent intrauterine deaths?

   (a) Amnioscopy

   (b) Cardiotocography (CTG)

      (i) non stress test (NST)

      (ii) oxytocin test (OTT)

   (c) Ultrasound (UH)

(2) *CTG* – How did CTG - as the gold standard of intrapartum fetal monitoring during labor - help the prevention of intrapartum mortality?

(3) *What changes were observed after the introduction of fetal pulse oximetry*
   - as far as the definition of fetal distress during labor is concerned?
   - Is labor safe to be continued when CTG has indicated fetal distress?
   - What can be concluded after analyzing C-section rates in cases with only CTG and, in cases with both CTG and pulse oximetry monitoring?

(4) *How did* the combined application of CTG, Fetal Pulse oximetry and amnioinfusion affect *the occurrance of* Meconium Aspiratios Syndroma (MAS) and labor phase 2 (delivery) in cases with *Meconium-stained amniotic fluid and* oligohydramnion?

STUDY POPULATION. METHODS

Antepartum testing, screening, preventive measures

Preventive labor inductions (applied to prevent intrauterine death and other adverse birth outcomes) in the Obstetrics and Gynecology department of Szent Lazar County Hospital of Salgotarjan between 1 January1999 and 31 December 2003 were analyzed - upon informed consent of the patients involved.
All inductions of labor were performed between the 32nd and 41st gestational weeks. (In lack of a Perinatal Intensive Care Unit in Salgotarjan, mothers under the gestational age of 32 weeks were referred to – and their babies delivered in utero –SE II Department of OB/CYN, Budapest.)

All antepartum deaths that occurred in the vicinity of the county town of Salgotarjan between 1 January 1975 and 2003 were analyzed. Furthermore, the period between 1 January 1975 and 31 December 1979 (when modern diagnostic methods were not yet available) was compared to the period of 1 January 1999 - 31 December 2003, when all modern diagnostic methods were applied in fetus monitoring according to estabilished prtocols. Amnioscopy and NST: upon hospitalization, and then every 2 days, OTT: upon suspicious and pathological NST results, in post-date/post-term cases and, upon inductions of labor; UH biometria: every 10 dayst, Flowmetria: every 2 days, Biophysical profile 2 times per week.

After diagnosing cases of semi-severe to severe preeclampsia, severe gestational hypertonia, macrosomia diabetes, dysmaturitas, or in cases of complicated obstetrical anamnesis, antepartum monitoring was continued after the the gestational age of 32 weeks until delivery – in accordance with the protocol descried later. Intrauterine death cases and their possible prevention were analyzed.

Intrapartum period

Diagnostic methods - aiming to prevent intrauterine death and other adverse perinatal outcomes - involving labors in the OB/GYN department of Szent Lazar County Hospital of Salgotarjan between 1 January1998 and 31 December 2003 were analyzed. In order to examine the effectivness of the use of fetal pulse oximetry, this 6-year long period was divided into 2 time-intervals: while in the 1998-2000 period fetus monitoring and decision making was based largely on CTG-results, in the 2001-2003 period fetal pulse oximetry was an available fetus monitoring method as well.

The prerequisites of applying Fetal Pulse oximetry were:
≥36 weeks of gestation
active labor (an active phase of labor)
the cervix dilated 2-4 cm
appropriate fetal head position during labor
rupture of the membranes

Fetal Pulse oximetry was not applied in cases of:
elective C-section
placenta praevia and vaginal bleeding of unknown causes
fetal heart anomalies requiring sudden operative intervention
active genital herpes and human papilloma virus
fever of unknown origin.

RESULTS

Out of 310 inductions of labor 141 (45,48%) was performed due to post-term pregnancy, in 135 (43,54%) cases the cause was fetal distress while in 34 (10,96%) cases it was due to adverse maternal condions. (There were overlapses between these last 2 categories in 21 cases.) Maternal age ranged between 15 and 42, most labor inductions occurred among the 24-28 age group. 82% of all labor inductions were performed after 37 weeks of pregnancy. Most inductions were carried out either in cases of first or second pregnancies

Intrauterine growth retardation	51
Placenta insufficiency	49
Preeclampsia (semi-severe, severe)	22
Oligohydramnios	45
Postdate pregnancy	141
Preterm, premature rupture of the membranes	35
HELLP syndrome	4
Congenital abnormality of the uterus	5
Mother’s severe kidney disease	10
Luxatio coxae congenita	5
Myopia gravis	6
Asthma, bronchial	4

Table I - The break-down of labor inductions according to diagnosis.

Cervical ripening with prostaglandins	136
Administered prostaglandins, followed by artificial rupture of the membranes	53
Prostaglandins, oxytocin injection, artificial rupture of the membranes	83
Oxytocin infusion	180
Oxytocin infusion, artificial rupture of the membranes	97
Prostaglandin, oxytocin infusion, artificial rupture of the membranes	83
Elective sectio caesarea (in 60 cases Spinal and in 17 cases epidural anaesthesia**)**	77

Table II - Methods of labor inductions.

Vaginal		183(59,03%)
Sectio. caes.		123 (39,67%)
	Elective	77(62,60%)
	induction of labor in emergency emergency c-birth	46 (37,39%)
Vacuum		4 (1,29%)
All together:		310

Table III – Methods of delivery

In the 5-year period that was examined, 1041 (23,31%) out of 4465, 123 (39,67%) out of 310 inductions of labour resulted in emergency C-births. The difference is significant .($p<0,001$). The 141 post-term labor induction cases were analyzed seperately. 62,60% of all C-sections were elective.